



OECA Briefing on Chemours

Office of Civil Enforcement
Waste & Chemical Enforcement Division
Water Enforcement Division
August 23, 2018

U.S. Environmental Protection Agency

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Purpose of Briefing

- To provide an update on our investigation to date and identify opportunities for further investigation

Overview of Slides

- Chemical Background
- Fayetteville Works, NC (Region 4)
- Washington Works, WV (Regions 3 and 5)
- Chambers Works, NJ (Regions 2 and 3)
- Next Steps

Chemical Background

- DuPont created Chemours in 2015
- Chemours manufactures:
 - Nafion® membranes (used in chloralkali production, medical devices, energy-storage devices)
 - Teflon™ fluropolymer products (nonstick coatings, semiconductors)
 - Krytox™ industrial synthetic lubricants
 - Viton™ fluoroelastomers (for automotive applications)
 - Capstone™ repellents and surfactants (fire fighting foam)

Chemical Background

- To create its products, Chemours manufactures and processes per- and polyfluoroalkyl substances (PFAS), including:
 - PFOA (Perfluorooctanoic acid)
 - PFOS (Perfluorooctane sulfonate)
 - GenX: collectively the 2 substances below subject to the 2009 TSCA Section 5(e) Consent Order
 - Dimer Acid (aka C3 Dimer Acid, HFPO Dimer Acid, P-08-508) and
 - Ammonium Salt (aka C3 Dimer Acid Ammonium Salt, HFPO Dimer Acid Ammonium Salt, P-08-509)

TSCA Section 5(e) Consent Order

- In 2009, OCSPP and DuPont entered into TSCA Section 5(e) Consent Order, which currently applies to Chemours.
- The requirements of the Consent Order apply to all commercial manufacturing, processing, distribution in commerce, use and disposal of GenX in the U.S.
- Consent Order allowed the company to produce the two Pre-manufacture Notice (PMN) GenX substances, subject to specific terms and conditions.

TSCA Section 5(e) Consent Order

- DuPont and now Chemours is required to:
 - limit releases to the environment,
 - establish a program for worker safety protection,
 - conduct tests and studies,
 - monitor and maintain records.

TSCA Section 5(e) Consent Order

- In the Consent Order, EPA raised concerns regarding the assessment of exposure and risk from the GenX substances including:
 - “EPA has concerns that these PMN substances will persist in the environment, could bioaccumulate, and be toxic (“PBT”) to people, wild mammals, and birds. EPA's concerns are based on data on the PMN substances, analogy to other [] chemicals, and to [PFOA] and [PFOS] which are both currently under review by EPA for PBT concerns . . .”

TSCA Section 5(e) Consent Order

- The Consent Order requires 99% “overall efficiency” rate for recapture of GenX.
 - “The Company shall recover and capture (destroy) or recycle the PMN substances at an overall efficiency of 99% from all the effluent process streams and the air emissions (point source and fugitive).”
 - In addition to the 99% provision, the Consent Order provides:
 - “The Company should make every effort to minimize or prevent any release to the environment of these substances. If any new uses of the substance are found, the Company shall find ways to recover and/or recycle the substance to comparable levels. Fugitive releases may be of particular concern.”
- The Consent Order **does not** apply to byproduct production of GenX.

GenX Detected in the Cape Fear River

- ORD/NC-led study and 2016 research paper
 - ORD discovery of GenX near Fayetteville in 2011
 - 2011 WV DEP Public Notice re: Consent Order concerning GenX (see Slide 20)
- According to Chemours, GenX has been released as a byproduct, from a process not covered by the Consent Order, into the Cape Fear River since 1980.



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Legacy and Emerging Perfluoroalkyl Substances Are Important Drinking Water Contaminants in the Cape Fear River Watershed of North Carolina

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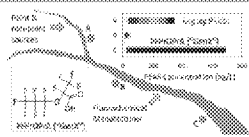
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ABSTRACT: Long-chain per- and polyfluoroalkyl substances (PFASs) are being replaced by short-chain PFASs and numerous alternatives. For six legacy PFASs and seven recently documented perfluorinated ether carboxylic acids (PFECAs), we report (1) their occurrence in the Cape Fear River (CFR) watershed; (2) their fate as water treatment precursors; and (3) their solubility on powdered activated carbon (PAC). In the headwater region of the CFR basin, PFECAs were not detected in raw water of a drinking water treatment plant (DWTP). For concentrations in legacy PFASs, very high. The U.S. Environmental Protection Agency's detection limit (below 100 ng/L) for perfluorooctanoic acid and perfluorooctyl sulfonate (PFOS) was exceeded on 17 of 107 sampling days. In raw water of a DWTP, PFECAs were not detected, but concentrations of perfluorooctanoic acid (PFEOA) and perfluorooctyl sulfonate (PFOS) were 4.9 ng/L (n = 17). In order PFECAs were detected with these solubility characteristics peak areas up to 15 times that of PFECAs. In the DWTP, PFECAs showed no significant correlation, identification, and detection was negligible. The solubility of PFECAs on PAC increased with increasing chain length. Replacing one CF₃ group with an ether oxygen increased the solubility of PFECAs on PAC, while replacing additional CF₃ groups did not lead to further solubility changes.



Fayetteville Works

*Fayetteville Works Facility
(with approximate location
of C3 Dimer Acid
manufacturing area)*



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Fayetteville Works

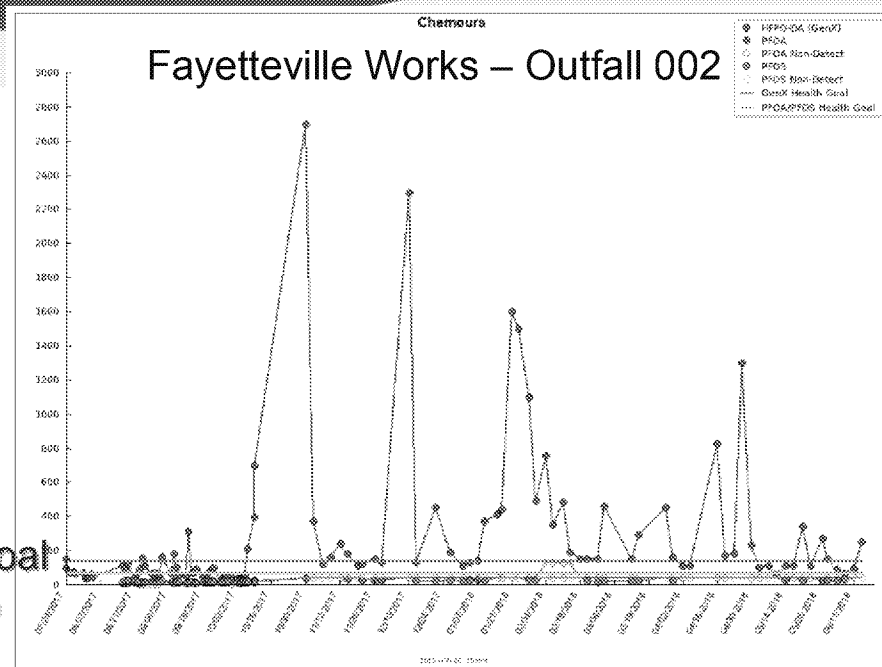
Water Sampling

- Surface water sampling conducted by EPA ORD, EPA Region 4, NC DEQ
- Drinking water sampling conducted by Chemours, at NC DEQ's request
 - 259 out of 349 residential wells detected GenX (115 were above NC's 140 ppt health goal)

Spikes since
cessation of
discharge

NC Health Goal
(140 ppt)

From NCDEQ
July 25, 2018



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Fayetteville Works

TSCA Investigation and Findings

- Joint Region 4/HQ (contractor) Core TSCA Inspection on June 28-29, 2017
- TSCA Section 5(e) Consent Order requirements (e.g., 99% recapture efficiency) appear to be met
- **Ex. 5 Deliberative Process (DP)**

Fayetteville Works

Ex. 5 Deliberative Process (DP)

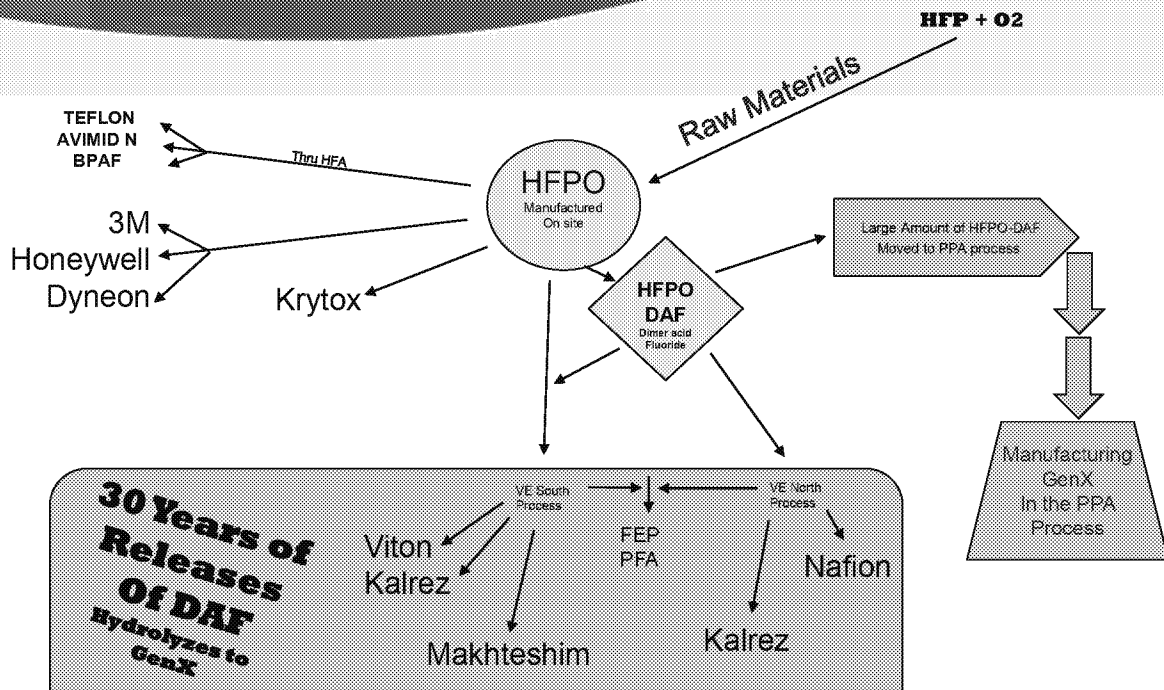


Fayetteville Works

Ex. 5 Deliberative Process (DP)

HFPO at Fayetteville

- HFPO is converted to HFPO-DAF.
- HFPO-DAF is used in numerous processes.
- When released to water, HFPO-DAF converts to GenX.



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Fayetteville Works

Ex. 5 Deliberative Process (DP)

Fayetteville Works

State Enforcement Actions

- *N.C. v. Chemours*, State Court Water Litigation
 - Sept. 7, 2017 - Complaint alleges violation of groundwater standards; misrepresentation, violation of NPDES permit disclosure requirements; unpermitted discharges
 - June 11, 2018 - Proposed order for preliminary relief includes no discharge of process wastewater, permanent replacement of private drinking water supplies
- Nov. 30, 2017 - NC DEQ partial NPDES suspension for process wastewater discharge from manufacturing areas

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Fayetteville Works

Ex. 5 Deliberative Process (DP)

Fayetteville Works

Ex. 5 Deliberative Process (DP)

Washington Works



*Washington Works Facility (with approximate
location of fluoroproducts production)*

Washington Works

Water Sampling

- Surface water sampling conducted by EPA ORD
- Pursuant to existing SDWA § 1431 order for PFOA, sampling of residential wells for GenX conducted by Chemours

Washington Works

State Actions

- **Jan. 31, 2012 WV DEP Consent Order**
 - Recognizes intent to undertake facility upgrades to utilize GenX
 - Establishes monthly average discharge limits for GenX of 77 ppb and 191 ppb and maximum daily discharge limits for GenX of 112 ppb and 278 ppb for two outfalls
 - Does not modify NPDES permit
- **July 30, 2018 NPDES Permit Renewal**
 - Establishes monitoring requirement for PFOA and GenX at certain outfalls
 - Establishes monthly average discharge limits for GenX of 9 ppb and 15 ppb and maximum daily discharge limits for GenX of 32 ppb and 43 ppb for two outfalls

Washington Works

TSCA Investigations and Findings

- Joint Region 3/HQ (contractor) Core TSCA Inspection on October 17-18, 2017
- Region 3 Inspection Report to be completed within the month
- Additional information needed to determine compliance with the 99% efficiency requirement to recapture the PMN substances at Washington Works
 - DMR reports show wide range of releases of GenX
 - Analysis looked at average and high-end concentration values, coupled with the corresponding discharge flow rates but assumptions made about use rate and other factors
 - Air emission data for the Washington Works facility has not been provided by Chemours
 - 2008 PMN for GenX included air emission estimates but it is not known if those estimates are reflective of current conditions (e.g. GenX use rate)



Washington Works

Case Development Investigation

- Clean Water Act § 301
 - Unauthorized discharges of PFAS not contemplated by NPDES permit
- Safe Drinking Water Act § 1431
 - Expansion of PFOA order to cover GenX

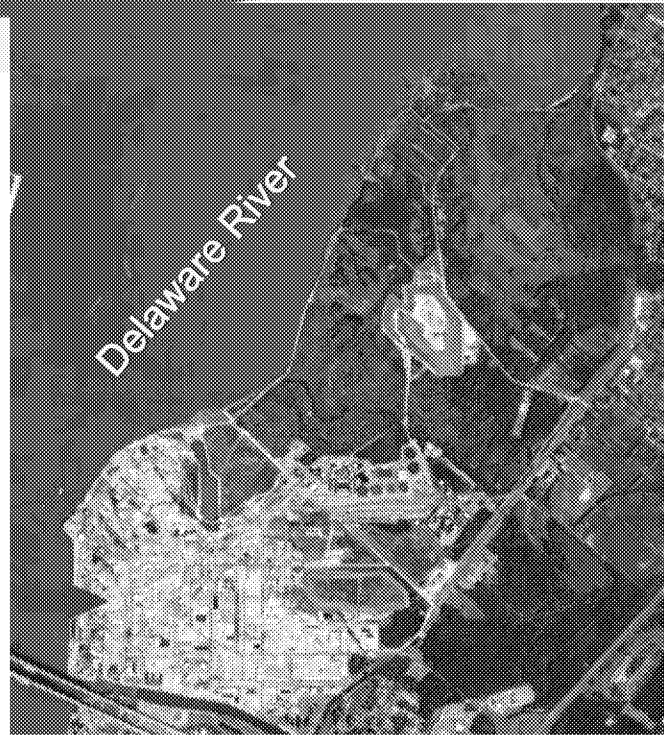
RCRA Applicability

- EPA and Dupont (Washington Works, West Virginia) reached an administrative settlement in 2005 for RCRA and TSCA violations regarding PFOA. EPA's administrative complaint established jurisdiction over PFOA using statutory definitions of solid waste and hazardous waste.
- From EPA's settlement:
 33. PFOA is in the soil and groundwater at, and within the vicinity of, DuPont's Washington Works Facility.
 34. PFOA, as described above, is a discarded material and a "solid waste" as defined under RCRA § 1004(27), 42 U.S.C. § 6903(27) and a "hazardous waste" as defined under RCRA § 1004(5), 42 U.S.C. § 6903(5).

RCRA Applicability

- At the time of the settlement, the Washington Works facility had a Federal RCRA permit for corrective action.
- Settlement resolved permit violation for failing to comply with EPA's request for "known toxicological information by failing to provide toxicity data concerning PFOA."
- West Virginia has since issued a state RCRA corrective action permit.

Chambers Works



*Chambers Works Facility
(with approximate location of
HFPO Dimer Ester 1205
Building PC West)*

Chambers Works

Water Sampling

- Chemours previously conducted sampling at a nearby public water system
 - NJ American Water Company is preparing an access agreement to allow Chemours to carry out sampling for GenX and other PFAS
- Chemours conducted sampling of 15 private wells; on-site monitoring wells

Chambers Works

State Action

- April 1, 2018 NJ DEP issued NPDES permit covering 15 PFAS, including long-chain compounds (PFOA, PFOS) and UCMR-3 compounds (PFNA, PFHxS, PFHpA, PFBS)
 - Does not cover GenX

Chambers Works

Ex. 5 Deliberative Process (DP)

Next Steps

Ex. 5 Deliberative Process (DP)